

Table of Intensities.

Scale No.	Intensity.
26 .....	7 ·0
28 .....	14 ·3
30 .....	43 ·0
31 .....	75 ·0
32 .....	100 ·0
33 .....	95 ·0
34 .....	66 ·5
35 .....	43 ·0
36 .....	37 ·5
37 .....	25 ·0
38 .....	33 ·5
39 .....	28 ·5
40 .....	25 ·0
41 .....	20 ·0
42 .....	18 ·0
44 .....	12 ·5
46 .....	10 ·0

IV. "On the Properties of Matter in the Gaseous and Liquid States under various conditions of Temperature and Pressure." By the late THOMAS ANDREWS, M.D., LL.D., F.R.S. Communicated by the PRESIDENT. Received February 7, 1886.

(Abstract.)

The following are the general conclusions to which this inquiry has led:—

1. The law of gaseous mixtures, as enunciated by Dalton, is largely deviated from in the case of mixtures of nitrogen and carbonic acid at high pressures, and is probably only strictly true when applied to mixtures of gases in the so-called perfect state.

2. The critical point of temperature is lowered by admixture with a permanent gas.

3. When carbonic acid gas and nitrogen diffuse into each other at high pressures, the volume of the mixture is increased.

4. In a mixture of liquid carbonic acid and nitrogen at temperatures not greatly below the critical point, the liquid surface loses its curvature, and is effaced by the application of pressure alone, while at lower temperatures the nitrogen is absorbed in the ordinary way, and the curvature of the liquid surface is preserved so long as any portion of the gas is visible.